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HIGH VOLTAGE ISOLATION DETECTION OF A FUEL CELL SYSTEM USING MAGNETIC FIELD CANCELLATION

ABSTRACT OF THE DISCLOSURE

A technique for providing high voltage isolation detection in a fuel cell system. The fuel cell system includes a high voltage component and a fuel cell stack. A first conductor is electrically coupled to a positive terminal and the high voltage component, and a second conductor is electrically coupled to a negative terminal and the high voltage component. Current propagating through the first and second conductors is in opposite directions. The first and second conductors extend through an opening in a torroid. The current propagating through the conductors generate magnetic fields that are concentrated by the torroid. A sensor is positioned within the torroid that detects the magnetic fields. If the high voltage component is electrically isolated, then the magnetic fields cancel. If the high voltage component is not isolated, the magnetic fields do not cancel, and the sensor provides a signal indicative of the isolation fault.